

NOLAN WAGENER

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Research Interests

Machine learning for robotics, reinforcement learning, model predictive control

Education

Georgia Institute of Technology

2015–2023

PhD, Robotics

School of Interactive Computing

Advisors: Byron Boots and Panagiotis Tsiotras

University of California, Berkeley

2010–2014

BS, Electrical Engineering and Computer Science

BS, Mechanical Engineering

Employment

Overland AI

April 2024 – Present

Senior Software Engineer

University of Washington

September 2021 – December 2023

Research Scientist

Paul G. Allen School of Computer Science & Engineering

Led development of the control stack for the DARPA RACER project

Microsoft Research

May 2021 – August 2021

Reinforcement Learning Research Intern

Mentors: Matthew Hausknecht and Ching-An Cheng

Studied use of GPT transformers for human motion completion in MuJoCo physics simulator

Awards and Honors

NeurIPS Scholar Award

2022

NeurIPS Top Reviewer

2022

NeurIPS Datasets and Benchmarks Track Outstanding Reviewer

2022

RSS Best Student Paper Award

2019

RSS Best Systems Paper Award, Finalist

2019

ICRA Best Conference Paper Award, Finalist

2017

NSF Graduate Research Fellowship

2015–2020

ICRA Best Robotic Manipulation Paper Award

2015

UC Berkeley Mechanical Engineering Department Citation, Honorable Mention

2014

Publications

Refereed

- [1] Zhengyao Jiang*, Yingchen Xu*, Nolan Wagener, Yicheng Luo, Michael Janner, Edward Grefenstette, Tim Rocktäschel, Yuandong Tian. **H-GAP: Humanoid Control with a Generalist Planner**. International Conference on Learning Representations (ICLR), 2024. **Spotlight Presentation**
- [2] Xiangyun Meng, Nathan Hatch, Alexander Lambert, Anqi Li, Nolan Wagener, Matthew Schmitt, JoonHo Lee, Wentao Yuan, Zoey Chen, Samuel Deng, Greg Okopal, Dieter Fox, Byron Boots, Amirreza Shaban. **TerrainNet: Visual Modeling of Complex Terrain for High-Speed, Off-Road Navigation**. Robotics: Science and Systems (RSS), 2023.
- [3] Nolan Wagener, Andrey Kolobov, Felipe Vieira Frujeri, Ricky Loynd, Ching-An Cheng, Matthew Hausknecht. **MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control**. Neural Information Processing Systems (NeurIPS), 2022.
- [4] Nolan Wagener, Byron Boots, Ching-An Cheng. **Safe Reinforcement Learning Using Advantage-Based Intervention**. International Conference on Machine Learning (ICML), 2021.
- [5] Adam Foris, Nolan Wagener, Byron Boots, Anirban Mazumdar. **Exploiting Singular Configurations for Controllable, Low-Power Friction Enhancement on Unmanned Ground Vehicles**. IEEE Robotics and Automation Letters (RA-L), 2020.
- [6] Nolan Wagener*, Ching-An Cheng*, Jacob Sacks, Byron Boots. **An Online Learning Approach to Model Predictive Control**. Robotics: Science and Systems (RSS), 2019. **Winner of Best Student Paper Award, Finalist for Best Systems Paper Award**
- [7] Ching-An Cheng, Xinyan Yan, Nolan Wagener, Byron Boots. **Fast Policy Learning Through Imitation and Reinforcement**. Uncertainty in Artificial Intelligence (UAI), 2018. **Plenary Presentation**
- [8] Grady Williams, Nolan Wagener, Brian Goldfain, Paul Drews, James Rehg, Byron Boots, Evangelos Theodorou. **Information Theoretic MPC for Model-Based Reinforcement Learning**. IEEE International Conference on Robotics and Automation (ICRA), 2017. **Finalist for Best Conference Paper Award**
- [9] Sergey Levine, Nolan Wagener, Pieter Abbeel. **Learning Contact-Rich Manipulation Skills with Guided Policy Search**. IEEE International Conference on Robotics and Automation (ICRA), 2015. **Winner of Best Robotic Manipulation Paper Award**

Non-Refereed

- [1] Matthew Hausknecht, Nolan Wagener. **Consistent Dropout for Policy Gradient Reinforcement Learning**. 2022.

Thesis

- [1] Nolan Wagener. **Machine Learning for Agile Robotic Control**. Georgia Institute of Technology, 2023.

Invited Talks

- “TerrainNet: Visual Modeling of Complex Terrain for High-Speed, Off-Road Navigation”, RSS Talk, 2023
- “MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control”, NeurIPS Virtual Talk, 2022
- “MoCapAct: A Multi-Task Dataset for Simulated Humanoid Control”, University of Toronto AI in Robotics Seminar, 2022
- “Model Predictive Control for Aggressive Off-Road Driving”, University of Washington EE P 545 (The Self Driving Car: Intro to AI for Mobile Robots) Invited Lecture, 2021
- “Safe Reinforcement Learning Using Advantage-Based Intervention”, Microsoft Research Summit, 2021
- “Safe Reinforcement Learning Using Advantage-Based Intervention”, ICML Virtual Talk, 2021
- “An Online Learning Approach to Model Predictive Control”, RSS Talk, 2019

Service

Reviewer for RSS, ICRA, IROS, ICML, NeurIPS, IEEE RA-L, Artificial Intelligence

Teaching Experience

Teaching Assistant for CS 3600 (Artificial Intelligence), Georgia Tech	2020
Teaching Assistant for CS 8803 ACRL (Adaptive Control and Reinforcement Learning), Georgia Tech	2019
Teaching Assistant for CS 4641 (Machine Learning), Georgia Tech	2018

Skills

Programming Languages

Python, C++, MATLAB

Libraries

PyTorch, Isaac Gym, MuJoCo, PyBullet, dm_control, ROS

Citizenship

United States, Canada